



Instructions for Creating a Vegetable/Fruit Nutrient Management Plan

Preliminary Steps:

1. Make sure that recent soil test are available (within 3 yrs.) for all fields that are included in the NMP. Soil tests need to be done at a lab using the Modified Morgan extraction (such as the UVM Agricultural and Environmental Testing Lab) and that give results for aluminum.
2. Make sure that all amendments that the grower applied have known nutrient analyses (often provided by the company selling it). If there is uncertainty about nutrient composition, then further work should be done to track down this information (either by contacting the company or by submitting a sample for analysis).
3. Maps are needed for the plan that meet the following requirements:
 - a) Landowner/operator
 - b) Prepared with assistance from _____
 - c) Scale of the map
 - d) Date prepared
 - e) North Arrow
 - f) Name of the County
 - g) District and State

The following types of maps should meet requirements for the NMP, but since some map makers may combine some of these maps, NM planner should consult NRCS guidelines to be sure that all applicable information is included.

Conservation Plan map (showing grower field names, FSA tract and field number, FSA acreage, erodibility determination).

Nitrate Leaching map (shows the nitrate leaching index for the fields)

Topographic map (optional)

Environmental Concerns map (showing the location of wetlands, wells, surface waters, springs, buffers, and nutrient spreading setbacks)

Soils map (showing the location of soil types on the farm)

4. Vermont Soil Fact Sheets

The planner will need to have a soil fact sheet for each of the soil types present on the farm.

5. Hold a meeting with the grower to fill out the farm information worksheet and to determine management practices, typical rotations and whether it makes sense to break up fields during the writing of the NMP. It is helpful to get a copy of the growers records at this point as well as to talk about where the grower plans to locate crops for the next growing season. Collect information that will be needed for RUSLE2: tillage, manure/compost application rates and methods, crop types grown, and fertilizer application rates and methods for each crop, and slope length and steepness for each field.

Completing RUSLE2, the P-Index, and the Nutrient Management worksheets

These tools do not need to be completed in this order, however RUSLE2 results will be needed for the P-Index and the NMP worksheets. P-Index results will also be needed for the NMP worksheets.

RUSLE2 for Vegetable Farms

The RUSLE2 rotations that were available for Vermont were limited and did not necessarily reflect common practices in the region. UVM Extension worked with NRCS to create management schemes that would better reflect actual practices being used. Because of the vast number of possible multiple year rotations, only single year rotations were created. Nutrient management planners can use these single year rotations to calculate multiple year rotations based on the specific circumstances on a farm.

Vegetable crops are grouped into the following categories based on crop type and, in some cases, planting date:

- Early veg bush (pepper tomato, eggplant, some herbs)
- Early veg cole (cabbage, broccoli, cauliflower, kale, brussel sprouts, collards, turnips)
- Early veg fine (carrots, onions, celery)
- Early veg leaf (lettuce spinach, chard, beets)
- Early veg vine (squash, pumpkin, cucumber, melon)
- Early veg legumes (pole beans, bush beans, peas, edamame)
- Early veg sweet corn
- Potatoes
- Late veg cole
- Late veg leaf
- Late veg sweet corn

Within each category there are a variety of management options including cultivation, weed control method, and plastic mulch use. Because there is a wide variety of management strategies practiced by vegetable growers in the region, in cases where a management strategy practiced by a grower is not captured by one of the available options, it will be necessary for Sandra Primard create a rotation specific to a grower's situation.

VT P Index for Vegetable/Fruit Producers

The Vermont P index is now available in a slightly modified form to meet the needs of nutrient management planning for vegetable farms. The modification is in the field for crop/vegetation type . The user's options include vegetable options grouped by P removal rate (low, medium and high) and apples. Examples of crops included in each category are given in the vegetable tab of the P-index spreadsheet.

Veg NMP Worksheets

Farm Info Sheet – fill in following instructions

Field Info –

Field Name – what the producer calls the field

Tract & Field # - FSA designated tract and field numbers

Field Acres - FSA acreage

Dominant Soil - from soil map

Limiting Soil - soil with characteristics limiting crop growth that is found in a field, can be the same as dominant soil

Hydrologic Group, Dominant Drainage Class, Water Table Depth, Flood Potential, and Depth to Bedrock of dominant soil (found on soil fact sheet)

RUSLE2 Soil Loss as Planned – (linked cell) number from RUSLE2 calculations, enter number on P-index sheet

Water Quality Site Considerations – list any specific site considerations that pertain to water quality at this site (for example the presence of springs, streams, wells, the need for a buffer, etc.

Soil Test P range – (linked cell) enter soil test results for P and Al on P-index sheet. Soil test P categories are defined in Table 1 (see below).

P Index as Planned – (linked cell) P Index results as determined for each field from P-index sheet.

Buffer – describe situation as it applies in the field.

VT P-Index

- Choose appropriate situation for each field for region and elevation.
- Input available Phosphorus and reactive Aluminum from soil test results.
- (linked cell) Organic amendment 1 and 2 fill in from individual field sheets as well as inorganic fertilizer amounts.
- Adjust application time of year, application method and time to incorporation to mirror the field situation.
- Enter in erosion rate (Rusle2 tons/acre), soil series, surface cover % (estimate cover based on field situation), Crop vegetation type (see chart on bottom of PI Instructions tab).
- Enter total distance to stream, vegetative buffer width, manure spreading setback and sediment trap structure or other erosion control where applicable.

Rotation – fill in the rotation to the best of your ability using information from past crop seasons and intended future plans.

Soil Test Schedule – each field is required to have a soil test taken a minimum of once every three years.

Soil Test Results – A summary table of field by field soil test results. These can be found on the soil test results. Other nutrients can be included in this summary if they are of concern to a grower.

Table 1.

Vermont soil test categories expressed as ppm in elemental form

	Low	Medium	Optimum	High	Excessive
	ppm				
Available P	0-2	2.1-4	4.1-7	7.1-20	>20
K	0-50	51-100	101-130	131-160	>160
Mg	0-35	36-50	51-100	>100	-----
Ca	<1000				

Amendments- Reference information. Typical values of typical fertilizer sources.

N Credits – Use this worksheet to estimate N credits that can be taken from previously applied manure, compost or plow-downs

Individual Field Sheets – This part of the workbook allows producers to create a nutrient budget for each field. The sheet is divided into three different sections to accommodate either a) different crops

grown within the same field, or b) planning for different crops if the grower is unsure what he/she will put in the field.

The field name, acreage and soil test results are transferred from previous worksheets where this information was entered. The user will enter year first used, ownership status (owned or rented), year of last soil test, and soil texture at the top of the worksheet.

In the individual crop sections, the user will enter crop to be grown, target pH and acreage of crop (if different from field acreage). Crop needs are entered either from the recommendation given on the soil test or as determined from the New England Vegetable Management Guide. There are two columns on the far right that can be used for other nutrients that are recommended besides N, P and K.

The user enters nutrient credits from organic matter, cover crop/plowed down sod, manure/compost last year and manure/compost this year (as calculated from the N credits worksheet). Next the user enters planned fertilizer applications in lbs/acre and formulation. There is space for four nutrient applications, and a running tally of remaining nutrient need is kept at the bottom of each section. A negative number indicates an excess.

Summary

After filling out an individual field sheet for each field, the user can print a summary of soil test results, crop needs and planned fertilizer applications.